1 Identification

- **Product identifier**
- **Trade name:** SM-102
- **Article number:** 33474

**Application of the substance / the mixture**
This product is for research use - Not for human or veterinary diagnostic or therapeutic use.

**Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:** Cayman Chemical Co.
  1180 E. Ellsworth Rd.
  Ann Arbor, MI 48108
  USA
- **Information department:** Product safety department
- **Emergency telephone number:**
  During normal opening times: +1 (734) 971-3335
  US/CANADA: 800-424-9300
  Outside US/CANADA: 703-741-5970

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS02 Flame
    - Flam. Liq. 2  H225 Highly flammable liquid and vapor.
  - GHS07
    - Acute Tox. 4  H302 Harmful if swallowed.
    - Skin Irrit. 2  H315 Causes skin irritation.
    - Eye Irrit. 2A  H319 Causes serious eye irritation.

- **Label elements**
  - **GHS label elements**
    The product is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms

GHS02  GHS07

Signal word Danger

Hazard-determining components of labeling:
SM-102

Hazard statements
H225 Highly flammable liquid and vapor.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements
P210 Keep away from heat/sparks/open flames.hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
P330 Rinse mouth.
P321 Specific treatment (see on this label).
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P337+P313 If eye irritation persists: Get medical advice/attention.
P370+P378 In case of fire: Use CO2, powder or water spray to extinguish.
P403+P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:
NFPA ratings (scale 0 - 4)

Health = 2  Fire = 0  Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 2  Fire = 0  Reactivity = 0

Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
Trade name: SM-102

- vPvB: Not applicable.

### 3 Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical characterization: Mixtures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description: Mixture of the substances listed below with nonhazardous additions.</td>
</tr>
</tbody>
</table>

#### Dangerous components:

<table>
<thead>
<tr>
<th>CAS: 64-17-5</th>
<th>ethanol</th>
<th>90.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTECS: KQ6300000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 2089251-47-6</td>
<td>SM-102</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

### 4 First-aid measures

- Description of first aid measures
  - General information: Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - After inhalation: In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact: Immediately wash with water and soap and rinse thoroughly.
  - After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - After swallowing: Immediately call a doctor.
- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: May cause anemia, cough, CNS depression, drowsiness, headache, heart damage, lassitude (weakness, exhaustion), liver damage, narcosis, reproductive effects, teratogenic effects.
  - Indication of any immediate medical attention and special treatment needed: No further relevant information available.

### 5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    - CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

### 6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  - Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
  - Dilute with plenty of water.
  - Do not allow to enter sewers/ surface or ground water.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Dispose contaminated material as waste according to item 13.
53.1.21

Ensure adequate ventilation.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>64-17-5 ethanol</th>
<th>1,800 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-2:</td>
<td>64-17-5 ethanol</td>
<td>3300* ppm</td>
</tr>
<tr>
<td>PAC-3:</td>
<td>64-17-5 ethanol</td>
<td>15000* ppm</td>
</tr>
</tbody>
</table>

* 7 Handling and storage

Handling:

Precautions for safe handling
No special precautions are necessary if used correctly.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.
Take precautionary measures against static discharge.

Information about protection against explosions and fires:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

Conditions for safe storage, including any incompatibilities

Storage: Store in accordance with information listed on the product insert.

Requirements to be met by storerooms and receptacles: Store in a cool location.

Information about storage in one common storage facility: Not required.

Further information about storage conditions:
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

Specific end use(s) No further relevant information available.

* 8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters

Components with limit values that require monitoring at the workplace:
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

64-17-5 ethanol

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

A3

Additional information: The lists that were valid during the creation were used as basis.
53.1.21

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

Breathing equipment: Not required.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:
Form: Liquid
Color: According to product specification

Odor:
Characteristic

Structural Formula
C44H87NO5

Molecular Weight
710.2 g/mol

Odor threshold:
Not determined.

Formulation
A solution in ethanol

pH-value:
Not determined.

Change in condition
Melting point/Melting range: Undetermined.
Boiling point/Boiling range: 78 °C (172.4 °F)

Flash point:
13 °C (55.4 °F)
### 10 Stability and reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**
  - **Thermal decomposition / conditions to be avoided**:
    No decomposition if used according to specifications.
  - **Possibility of hazardous reactions**: No dangerous reactions known.
  - **Conditions to avoid**: No further relevant information available.
  - **Incompatible materials**: No further relevant information available.
  - **Hazardous decomposition products**: No dangerous decomposition products known.
# 11 Toxicological information

## 11.1 Information on toxicological effects

### 11.1.1 Acute toxicity:

#### LD/LC50 values that are relevant for classification:

**ATE (Acute Toxicity Estimate)**

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>5,000 mg/kg</td>
<td>20,000 mg/m³</td>
</tr>
</tbody>
</table>

**64-17-5 ethanol**

<table>
<thead>
<tr>
<th>Route</th>
<th>TDLO</th>
<th>LD50</th>
<th>TCLO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>1.14 ml/kg (man)</td>
<td>7,060 mg/kg (rat)</td>
<td>1,800 (hmn)</td>
</tr>
<tr>
<td>Dermal</td>
<td>650 (man)</td>
<td>40,000 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>1,800 (hmn)</td>
<td>10 h - 20,000 mg/m³ (rat)</td>
<td></td>
</tr>
<tr>
<td>Irritation of skin</td>
<td>1,800 mg/kg (wmn)</td>
<td>280 mg/kg (rat)</td>
<td></td>
</tr>
</tbody>
</table>

#### Primary irritant effect:

- **on the skin**: Irritant to skin and mucous membranes.
- **on the eye**: Irritating effect.
- **Sensitization**: No sensitizing effects known.

#### Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:

- **Harmful**
- **Irritant**

#### Carcinogenic categories

- **IARC (International Agency for Research on Cancer)**
  - 64-17-5 ethanol: 1
- **NTP (National Toxicology Program)**
  - None of the ingredients is listed.
- **OSHA-Ca (Occupational Safety & Health Administration)**
  - None of the ingredients is listed.

# 12 Ecological information

## 12.1 Toxicity

- **Aquatic toxicity**: No further relevant information available.
- **Persistence and degradability**: No further relevant information available.
- **Behavior in environmental systems**:
  - **Bioaccumulative potential**: No further relevant information available.
  - **Mobility in soil**: No further relevant information available.
- **Additional ecological information**:

#### General notes:

- Water hazard class 1 (Self-assessment): slightly hazardous for water
- Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
### 13 Disposal considerations

- **Waste treatment methods**
  - **Recommendation:** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings**:
  - **Recommendation:** Disposal must be made according to official regulations.

- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1170</td>
<td></td>
</tr>
</tbody>
</table>

- **UN proper shipping name**
  - **DOT**: Ethanol solutions
  - **IMDG**: ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
  - **IATA**: Ethanol solution

- **Transport hazard class(es)**
  - **DOT**: 3 Flammable liquids
  - **Label**: 3

- **IMDG, IATA**
  - **Class**: 3 Flammable liquids
  - **Label**: 3

- **Packing group**
  - **DOT, IMDG, IATA**: II

- **Environmental hazards:** Not applicable.

- **Special precautions for user**
  - **Warning**: Flammable liquids
  - **Hazard identification number (Kemler code)**: 33
  - **EMS Number**: F-E,S-D

* (Contd. on page 9)
### 53.1.21

**Stowage Category**
- A

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
- Not applicable.

**Transport/Additional information:**
- **DOT**
  - **Quantity limitations**
    - On passenger aircraft/rail: 5 L
    - On cargo aircraft only: 60 L

**IMDG**
- **Limited quantities (LQ)**
  - 1L
- **Excepted quantities (EQ)**
  - Code: E2
  - Maximum net quantity per inner packaging: 30 ml
  - Maximum net quantity per outer packaging: 500 ml

**IATA**
- **Remarks:**
  - When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.
  - Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

**UN "Model Regulation":**
- UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, II

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### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - No further relevant information available.

- **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.

  - **Section 313 (Specific toxic chemical listings):**
    - None of the ingredients is listed.

- **TSCA (Toxic Substances Control Act):**
  - 64-17-5 ethanol
    - ACTIVE

- **Hazardous Air Pollutants**
  - None of the ingredients is listed.

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.

  - **Chemicals known to cause reproductive toxicity for females:**
    - None of the ingredients is listed.

  - **Chemicals known to cause reproductive toxicity for males:**
    - None of the ingredients is listed.

  - **Chemicals known to cause developmental toxicity:**
    - 64-17-5 ethanol

(Contd. on page 10)
53.1.21

· Carcinogenic categories
  
  · EPA (Environmental Protection Agency)
    None of the ingredients is listed.
  
  · TLV (Threshold Limit Value)
    64-17-5 ethanol A3
  
  · NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

All chemicals may pose unknown hazards and should be used with caution. This SDS applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. Cayman Chemical Company assumes no responsibility for incidental or consequential damages, including lost profits, arising from the use of these data. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Cayman Chemical Company assumes no responsibility for the completeness or accuracy of the information contained herein.

· Department issuing SDS: Environment protection department.
· Contact: -
· Date of preparation / last revision 06/07/2022 / -

· Abbreviations and acronyms:
  
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  EINECS: European Inventory of Existing Commercial Chemical Substances
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Flam. Liq. 2: Flammable liquids – Category 2
  Acute Tox. 4: Acute toxicity – Category 4
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

· * Data compared to the previous version altered.